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STUDIES ON SPIROBOLOID MILLIPEDS. I. THE GENUS  
EURHINOCCRICUS BROLEMANN

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*Eurhinoericus* was proposed as a subgeneric name by H. W. Brolemann in 1903. In 1907 the name was somewhat casually considered (without formal recognition) by Pocock, who discussed it in relation to its type species (*biolleyi*) and a closely related one which he described from Guerrero. Most subsequent authors have ignored the name. It has, however, been recently (1951) revived by Schubart in his summary of the rhinoericid genera for the reception of 31 species.

During the study of diplopods collected in Chiapas and presented to me by Dr. Clarence Goodnight, I detected a very small rhinoericid obviously related to *biolleyi*. Determination of the generic position of this creature required consideration of the status of *Eurhinoericus*. The arrangement here presented is somewhat at variance with that of Dr. Schubart, but is not to be regarded as an attempt to discredit his system. Rather it is to be considered chiefly an alternative interpretation, resulting from utilization of a different sort of diagnostic criterion, and offered for the consideration of other workers.

Pocock pointed out (1908, *Biologia Centrali-Americana*, p. 73) that *Eurhinoericus*, as a taxonomic entity, ". . . rests upon the structure of the gonopods," which, in *biolleyi*, are certainly divergent enough from those of the larger, more typical *Rhinoericus* forms. Schubart's usage of the name, however, relies upon the presence of only four antennal sensory cones as the chief criterion for separation from *Rhinoericus*.

Although the configuration of the male genitalia of most diplopods has been for many years regarded as the primary source of characters for the recognition of species; only lately has it come to be considered that the gonopods also afford the most reliable indices of generic and suprageneric relationship. Although essentially qualitative in nature, and not always readily definable, characters reflected by gonopod structure are obviously those which represent natural phylogenetic lines of development. Modifications of the body surface often assume bizarre proportions in diplopods, particularly in the polydesmoids. For this reason, erection of genera upon non-sexual developments alone could readily result in a vast number of monotypic genera many of which would be inseparable from each other as regards gonopods. Furthermore, because of much parallel (and convergent) evolution involving basically different groups, suprageneric groupings would be altogether heterogeneous. Attems' "families" Cryptodesmidae and Oniscodesmidae are good examples of this overemphasis of body form.

It seems particularly unwise, in dealing with any animal group, to

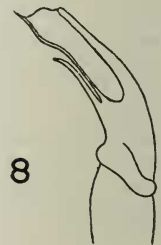
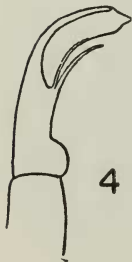
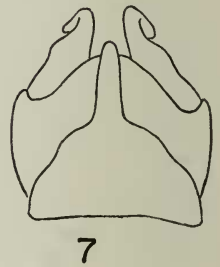
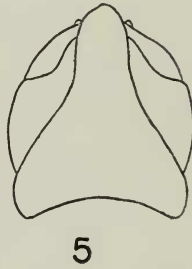
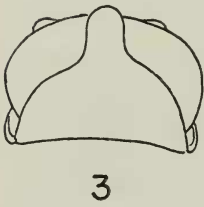
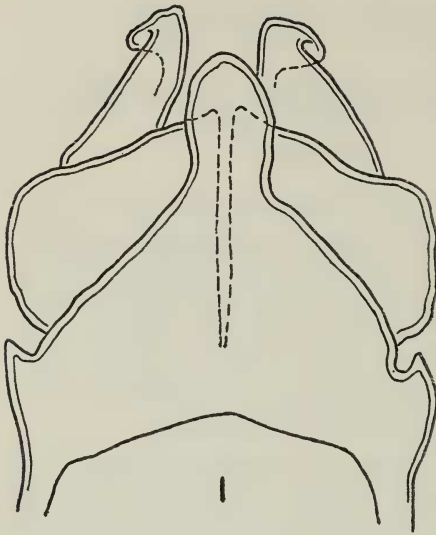


Plate X

base a genus upon a single diagnostic character unless there is a general concurrency in all other respects by the included species. I have already commented elsewhere on the practice of using random quantitative features for generic distinction (*viz.*, the presence or absence of pores on the 5th segment in spirostreptoids, when "genera" so discriminated are identical with others in gonopod structure and no reasonable distributional pattern obtains from the ranges of the species associated by such characters. *Diaporus* is a good example of such a misfounded genus).

With respect to *Eurhinocricus*, one finds that by grouping species on the basis of the number of antennal cones a considerable diversity in size, body form, genitalia, and distribution must be embraced with only this single unifying character. If, on the other hand, appeal is made to the type of gonopod pattern shown by *biolleyi*, only a few species may be so associated, and these generally agree in their mutually small size, in the presence of a strongly developed secondary transverse sulcus, and in occupying a logical and coherent geographic range. The posterior gonopods, which form the basis of generic recognition, are so very similar in all of these species that other characters must be sought for specific discrimination. Some of these species have four sensory cones, one of them has many, yet in view of the striking genitalic similarity one can scarcely admit that it properly belongs in another genus with all manner of vastly unlike species. I would submit that, unless supplementary characteristics prevail, differences based upon "numerical" considerations be regarded as of only specific value in the classification of diplopods.

In connection with the proposal of a new species of *Eurhinocricus*, a brief summary of the genus, in the limited sense as I presently visualize it, becomes necessary.

#### Genus *Eurhinocricus* Brolemann

*Eurhinocricus* (as subgenus of *Rhinocricus*) Brolemann, 1903, Ann. Soc. ent. France, vol. 72, p. 131.—Pocock, 1907, Biol. Centr.-Amer., Diplop., p. 68, 73.

*Eurhinocricus* Schubart, 1951, An. Acad. Brasileira Cienc., vol. 23, no. 2, p. 227.

*Type*.—*R. (E.) biolleyi* Brolemann, by original designation.

*Diagnosis*.—The species of this genus are uniformly small millipeds, 5 mm. or less in diameter. The usual transverse dorsal sulcus is replaced by a secondary one lying in front of the repugnatorial pores (a character shared, however, with certain West Indian species of *Rhinocricus*).

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#### Explanation of plate

- Figs.* 1, 2. *Eurhinocricus parvissimus*, n. sp., from holotype.  
3, 4. *E. biolleyi* Brolemann, after Chamberlin, 1947.  
5, 6. *E. tidus* (Chamberlin), after Chamberlin, 1947.  
7, 8. *E. omiltemae* Pocock, after Pocock, 1907.

Odd numbered figures show anterior gonopods in cephalic aspect; even numbered figures are of the posterior gonopod, showing the similarity of this appendage among different species.

Antennal sensory cones only four (except in *tidus*). The primary generic character is the nature of the posterior pair of gonopods. In these the distal joint (telopodite) is much shorter than in other rhinocricid genera, and is of the form of a slender, slightly curved, membranous blade, about the same size throughout its length. The solenomerite is slender and unmodified, arising from a position near the base of the telopodite. It may be emphasized as a diagnostic feature that the distance from the coxal articulation to the insertion of the solenomerite is considerably less than the length of that process itself.

*Range*.—Mountainous region of northern Central America, from Kern Co., California south to San Jose, Costa Rica and the Cocos Islands.

*Species*.—Four, as follows:

*Eurhinocricus biolleyi* Brolemann

*Rhinocricus* (*Eurhinocricus*) *biolleyi* Brolemann, 1903, Ann. Soc. ent. France, vol. 72, p. 132, pl. 1, figs. 1-6.

*Rhinocricus cocos* Chamberlin, 1947, Proc. Acad. Nat. Sci. Philadelphia, vol. 99, p. 38, figs. 27, 28. (Type locality: Chatham Bay, Cocos Islands.)

? *Rhinocricus biolleyi* Pocock, 1907, Biol. Centr.-Amer., Diplop., p. 72.  
*Type locality*.—Cocos Islands.

*Range*.—Known only from the type locality. Pocock, in the work cited above, records the species from San Jose and Cachi, Costa Rica, upon what authority we are not told. It seems unlikely that specimens from such distant and dissimilar places would be conspecific, unless the Cocos Island population was introduced from the mainland.

Chamberlin's species *cocos* is unquestionably synonymous, having the same type locality as *biolleyi*. Minor differences in the respective illustrations of the gonopods may be attributed to individual variation or to difference in execution by the two authors.

*Eurhinocricus omiltemae* Pocock

*Rhinocricus* (*Eurhinocricus* by implication) *omiltemae* Pocock, 1907, Biol. Centr.-Amer., Diplop., p. 67, pl. 6, figs. 12a-c.

*Type locality*.—Omilteme, 8000 ft., Guerrero.

*Range*.—Known only from the type locality.

*Eurhinocricus parvissimus*, new species

Figs. 1, 2

*Type specimen*.—U. S. Nat. Mus. no. 2062, male and female, collected at Finca Guatemoc (5800 ft.) on the Volcan de Tacana, above Cacahuatan, Chiapas; August 6, 1950. Dr. and Mrs. Clarence J. Goodnight, collectors.

*Diagnosis*.—Size very small, less than 20 mm. in length; ocelli greatly reduced, less than 20 in each patch; sternal plate of anterior gonopods of male with a distinct constriction setting off the distal part of the median projecting portion; dorsum with broad purplish and narrow white crossbands.

*Description of types*.—Male 2.3 mm. in width, exact length not determinable but less than 18 mm. Segments 37, the last 4 being legless. Antennae short, robust, sensory cones 4. Head completely smooth; eye

patches separated by more than twice their diameter, ocelli 16 on one side and 17 on the other, in 4 and 5 rows respectively. Segments completely smooth and shining; the transverse sulci fairly distinct. Telson rather large, equaling or slightly surpassing the anal valves which are smooth, convex, with very weakly indicated mesial margins.

Gonopods (cf. figs. 1, 2) with a somewhat triangular sternal plate which is produced into a small lateral projection on each side proximally. The median projection is set off by a slight constriction distad of which it is somewhat broadened and terminating in a rounded lobe which extends past the coxal elements and is in turn exceeded in length by the telopodites. Posterior gonopod short, heavy; coxal articulation conspicuous. Telopodite a laminate membranous blade, distally becoming somewhat hood-like and protecting the solenomerite. Latter arising from near the base of the telopodite, sinuous in outline and reaching to end of the main blade.

Color appearing pale ferrugineous to the eye, but under magnification the pattern is seen to be as follows: prozonite colorless, median third of segment very dilute purple below the level of the pore but with a reddish-brown to purple crossband across the dorsum, this margined in front by a narrow white line. Caudal half of metazonite with a clear yellow band completely around body. Legs and sternites grayish-white; head and antennae yellowish, eye patches black; anal segment and valves reddish-brown.

Female differing from male in the following respects: length, 18.5 mm., width, 2.4 mm.; segments 38 of which the last three are legless. Color pattern indistinct, animal largely yellowish-white, suggesting recent moult.

*Remarks.*—This species appears to be the smallest member of the Rhinocricidae yet described, being somewhat smaller than the tiny *E. sabulosus* Pocock of Jamaica. Four legless terminal segments seems a large number for an adult, yet the genitalia seemed fully sclerotized and the color pattern of the male indicates maturity.

Considering the extensive range covered by members of this genus, and the small size of most of them, one feels safe in predicting the eventual discovery of a great many additional forms in the higher parts of Mexico and adjacent countries.

*Eurhinocricus tidus* (Chamberlin)

*Rhinocricus tidus* Chamberlin, 1947, Proc. Acad. Nat. Sci. Phila., vol. 99, p. 37, figs. 25, 26.

*Type locality.*—Fort Tejon, Kern Co., California.

*Range.*—Known only from the type locality.